catheters. This approach maintains a functioning access, avoids catheters and their complications, and preserves future access sites.

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PS112.

Predicting Cognitive Decline After Carotid Endarterectomy (CEA) or Carotid Artery Stenting (CAS) Using Structural Connectivity Graph Analysis

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Objectives: Many carotid endarterectomy (CEA) and carotid artery stenting (CAS) patients experience postoperative neurocognitive decline. We sought to apply structural connectivity metrics to identify patients at increased risk for postoperative decline based solely on preoperative imaging.

Methods: Under an IRB approved protocol, 28 patients underwent presurgical T1 structural and 30 direction diffusion tensor imaging (DTI) magnetic resonance imaging and neuropsychological tests before and 1 month after surgery. Patients with decline showed decreased performance on the Rey Auditory Verbal Learning Test on 1-month follow-up. The T1 images were processed using FreeSurfer 5.3, with resulting segmentations reviewed and edited as needed under neuroradiologist supervision. Whole brain tractography was performed using Diffusion Toolkit and visually inspected. Connectivity matrices were then generated, and graph metrics were computed using the Brain Connectivity Toolbox.

Results: Controlling for age, classifiers using the graph analysis metrics "weighted optimal community structure" and "binary component sizes" were able to identify patients with postoperative cognitive decline with 81% sensitivity 83% and specificity ($P < .05$, false discovery rate .05). These two measures were computed at 10 proportion edge thresholds from 0.1 to 1 at intervals of 0.1 in weighted and binary networks respectively.

Conclusions: Applying preoperative structural connectivity analysis in CEA and CAS patients may identify patients at increased risk for postoperative cognitive decline, and in so doing may help better risk stratify patients and guide them to preventive interventions.

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PS114.

Contemporary Results of Carotid Endarterectomy: Is it a Beneficial Procedure for Women?

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Objectives: Previous randomized trials have suggested that carotid endarterectomy (CEA) may not be efficacious for women primarily due to higher postoperative event rates. Our objective was to compare contemporary CEA outcomes among women and men in a "real world" setting.

Methods: CEA procedure related data were obtained from the 2011-2012 American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP) database. Symptomatic patients were those with ipsilateral stroke, transient ischemic attack, or amaurosis fugax. Patient characteristics and 30-day postoperative outcomes were examined for sex and symptomatology.

Results: Of the 5423 patients with specific data on CEA, 2242 (41.3%) were symptomatic and 3181 (58.7%) were asymptomatic. There were a higher proportion of women in the asymptomatic than symptomatic group (40.3% vs 37.3%; $P = .025$). For the entire cohort, women were more often obese (34.1% vs 30.9%; $P < .001$) and a smoker (29.5% vs 24.1%; $P < .001$), but less often taking statins (75.9% vs 80.5%; $P < .001$) than men. Patch use was equivalent between women and men (76.1% vs 76.8%; $P = .4997$). After adjusting for patient characteristics, there were no statistically significant differences between women and men for postoperative death, stroke, or myocardial infarction for symptomatic and asymptomatic groups (Table).

Conclusions: Analysis of this reliable third-party collected and validated data shows that postoperative outcomes were similar among women and men regardless of symptom status. However, there remains ample room for improvements in optimal medical therapy for both women and men.

Table.

	Total	*Symptomatic*				*Asymptomatic*			
		Women	*Men*	*For Women*		*Women*	*Men*	*For Women*	
30-day Postoperative Outcome	*n = 5423*	*n = 836 37.3%*	*n = 1406 62.7%*	*Odds ratio*	P-*value*	*n = 1282 40.3%*	*n = 1899 59.7%*	*Odds ratio*	P-*value*
Composite primary end point	4.9%	5.3%	6.1%	0.821	*.331*	3.9%	4.6%	0.873	*.464*
Death	0.7%	1.2%	0.9%	0.960	*.931*	0.6%	0.4%	1.617	*.390*
Stroke	2.3%	4.5%	3.8%	0.934	*.733*	1.3%	1.4%	0.924	*.804*
Myocardial infarction	2.5%	1.8%	2.1%	0.810	*.515*	2.1%	3.3%	0.682	*.110*

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PS116.

Are NASCET and ACAS Guidelines Applicable to Modern Imaging Measurements: Digital Subtraction Angiography vs TeraRecon CTA

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Objectives: The North American Symptomatic Carotid Endarterectomy Trial (NASCET) and Asymptomatic Carotid Artery Surgery Trial, helped establish guidelines for carotid intervention based on conventional angiography measurements of stenosis. However, with improvement in noninvasive imaging techniques, the use of computed tomography angiography (CTA) has become widespread. The goal of this retrospective evaluation was to compare the degree of carotid stenosis based on TeraRecon compared with angiography and how these potential differences may impact decisions for intervention.

Methods: The percentage of carotid stenosis was obtained via digital subtraction angiography and TeraRecon. The study population included 58 patients who underwent carotid artery stenting for symptomatic and asymptomatic carotid stenosis between 2006 and 2013. The TeraRecon CTA and angiography stenosis measurements were analyzed by Student *t*-test to determine if traditional NASCET angiography determinations for intervention are applicable to CTA.

Results: TeraRecon CTA measurements of the percentage of carotid artery stenosis were, on average, 6.5% higher than those based on angiography. Analysis with the Student *t*-test showed a statistically significant difference between the two measurements ($P = .0033$).

Conclusions: Overall, we found that measurements of percent carotid artery stenosis in asymptomatic and symptomatic patients undergoing carotid stent placement were higher when using TeraRecon CTA compared with measures with angiography. This prompts the question have we been over-intervening on patients by using NASCET and ACAS guidelines on patients imaged with CTA?

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PS118.

Regional Differences in Patient Selection and Treatment of Carotid Artery Disease in the Society for Vascular Surgery Vascular Quality Initiative (SVS VQI)

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Objectives: There are limited data on the regional variation of carotid endarterectomy (CEA) and carotid stenting (CAS). We use the Society for Vascular Surgery Vascular Quality Initiative (SVS-VQI) to evaluate regional differences in CEA and CAS across the United States.

Methods: We used the SVS-VQI to identify patients undergoing CEA and CAS between 2009 and 2012. Each of 14 regions was evaluated. Regions performing <50 CAS were excluded, leaving nine regions.

Results: A total of 14,871 cases were performed, and a minority of cases used CAS (vs CEA) to treat both symptomatic and asymptomatic disease. Substantial regional variation in patient characteristics (eg, symptom status, stenosis >70%), technical approach (eg, CEA vs stent, patch use, shunt use, neurologic monitoring, cerebral protection device use and type), and evidence-based process measures (eg, antiplatelet and statin use, patch use) are demonstrated in the Table.

Conclusions: This first investigation of a national clinical database demonstrates significant regional variation in carotid disease management. Future studies on the association of regional variation with risk-adjusted outcomes offer the opportunity for quality improvement through prospective identification of best practices.

Table. Ranges of variables across regions

Variable	*Min*	*Max*
Symptomatic patients who had CAS (vs CEA), %	7	32
Asymptomatic patients who had CAS (vs CEA), %	7	23
CEA with symptoms, %	20	42
CAS with symptoms, %	10	53
CEA with patch, %	73	95
CEA with shunt use, %	33	76
CEA where EEG used by surgeons who routinely shunt, %	0	68
CAS on both antiplatelet and statin, %	60	82
CAS discharged on both antiplatelet and statin, %	75	91
Asymptomatic CAS with stenosis >70%, %	67	97
CAS predialated, %	27	68
CAS postdialated, %	60	96

All $P < .01$.

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PS120.

Outcomes After Early and Delayed Carotid Endarterectomy in Patients With Symptomatic Carotid Artery Stenosis

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Objectives: To define outcomes after carotid endarterectomy (CEA) in symptomatic patients when operated on ≤14 days after onset of symptoms or later (<14 days).

Methods: Clinical data of consecutive patients who underwent CEA (2003-2012) for symptomatic carotid